

# The Savannah River Site Environmental Bulletin

September 22, 2016

Volume 28, Number 9

## ***U. S. Department of Energy Conducts Phased Submittals of the Fifth Five Year Remedy Review at Savannah River Site***

### ***Third Phase: Savannah River Site Operable Units with Engineered Cover Systems***

The U.S. Department of Energy (DOE) is conducting the Fifth Five-Year Remedy Review for some remedial actions implemented at the Savannah River Site (SRS). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that remedial actions that result in hazardous substances, pollutants, or contaminants remaining at an operable unit at levels unsuitable for unrestricted exposure be subject to a five-year remedy review. The purpose of this review is to determine whether the remedies remain protective of human health and the environment and to evaluate the implementation and performance of the selected remedies. The U.S. Environmental Protection Agency (EPA) and South Carolina Department of Health and Environmental Control (SCDHEC) will review and approve whether the five-year remedy review adequately addresses the protectiveness of each remedy. The methods, findings, and conclusions of the five-year remedy review will be documented in a report that will be made available to the public.

SRS occupies approximately 310 square miles of land adjacent to the Savannah River, principally in Aiken and Barnwell counties of South Carolina. SRS is located approximately 25 miles southeast of Augusta, Georgia, and 20 miles south of Aiken, South Carolina. During the early 1950s, SRS began to produce materials used in nuclear weapons. Chemical and radioactive wastes are by-products of nuclear material production processes. These wastes have been treated, sorted, and in some cases disposed of at SRS. Hazardous substances, as defined by CERCLA, are currently present in the environment at SRS, with past disposal practices resulting in soil and groundwater contamination.

Each SRS operable unit is unique in size, location, environmental factors, and contaminant type. Contaminants may include chemicals (e.g., trichloroethylene, tetrachloroethylene, etc.), metals, pesticides, polychlorinated biphenyls, and radionuclides (e.g., tritium, cesium-137, etc.). Contaminants may be found in surface soils, subsurface soils, and/or groundwater. Operable unit-specific remedial actions are designed to address the contaminants for the protection of human health and the environment. In general, contaminated media are either covered, stabilized in place, treated, removed, or managed with land use controls (LUCs). Common remedies implemented at SRS include LUCs, cover systems (i.e., soil covers, geosynthetic covers), excavation and disposal actions, removal systems (i.e., soil vapor extraction, electrical resistance heating, dynamic underground stripping), treatment systems (i.e., enhanced bioremediation, chemical oxidation), stabilization (i.e., in situ grouting), mixing zones, and monitored natural attenuation.

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Previous five-year remedy reviews were conducted for all SRS operable units that have implemented a remedial action with the results documented in a single report. Due to the increasingly large size of a single report, this strategy was altered for the Fifth Five-Year Remedy Review Report. The strategy is to now conduct phased remedy reviews for operable unit groupings based on remedy similarity rather than combining all operable unit reviews in a single report. The operable units will be grouped by the following remedy types: (1) native soil cover and/or LUCs, (2) groundwater, (3) engineered cover system, (4) geosynthetic or stabilization/solidification cover system, and (5) operating equipment. The remedy reviews for each group will be performed in successive years, so that all groups/ reviews are completed within five years from the Fourth Five-Year Remedy Review Report, which was issued on February 4, 2014. The phased submittals allow DOE, EPA, and SCDHEC to effectively identify and resolve issues for similar remedies simultaneously and efficiently implement any needed optimization initiatives for similar projects. The phased approach began with the submittal of the Fifth Five-Year Remedy Review Report for Savannah River Site Operable Units with Native Soil Covers and/or Land Use Controls in December 2014.

The five-year remedy review will address three major questions:

- Are the remedies functioning as intended by the decision document?
- Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of remedy selection still valid?
- Has any other information emerged that could call into question the protectiveness of the remedy?

The third phased submittal of the Fifth Five-Year Remedy Review Report will focus on SRS operable units with engineered cover systems. Engineered cover systems are similar to native soil covers, but have a lower permeability if well compacted, promote more effective surface drainage, and minimize runoff. The engineered cover system grouping was expanded to include operable units that used common fill or clayey material from offsite sources and had some form of engineering controls (i.e., soil material requirements, soil compaction requirements, and/or storm water management systems). DOE will notify the public when the Fifth Five-Year Remedy Review Report for Savannah River Site Operable Units with Engineered Cover Systems is complete and is available to the public. The report is currently planned to be available to the public in February 2018.

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## ***U. S. Department of Energy Conducts Phased Submittals of the Fifth Five Year Remedy Review at Savannah River Site***

### ***Fourth Phase: Savannah River Site Operable Units with Geosynthetic or Solidification/Stabilization Cover Systems***

The U.S. Department of Energy (DOE) is conducting the Fifth Five-Year Remedy Review for some remedial actions implemented at the Savannah River Site (SRS). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that remedial actions that result in hazardous substances, pollutants, or contaminants remaining at an operable unit at levels unsuitable for unrestricted exposure be subject to a five-year remedy review. The purpose of this review is to determine whether the remedies remain protective of human health and the environment and to evaluate the implementation and performance of the selected remedies. The U.S. Environmental Protection Agency (EPA) and South Carolina Department of Health and Environmental Control (SCDHEC) will review and approve whether the five-year remedy review adequately addresses the protectiveness of each remedy. The methods, findings, and conclusions of the five-year remedy review will be documented in a report that will be made available to the public.

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Each SRS operable unit is unique in size, location, environmental factors, and contaminant type. Contaminants may include chemicals (e.g., trichloroethylene, tetrachloroethylene, etc.), metals, pesticides, polychlorinated biphenyls, and radionuclides (e.g., tritium, cesium-137, etc.). Contaminants may be found in surface soils, subsurface soils, and/or groundwater. Operable unit-specific remedial actions are designed to address the contaminants for the protection of human health and the environment. In general, contaminated media are either covered, stabilized in place, treated, removed, or managed with land use controls (LUCs). Common remedies implemented at SRS include LUCs, cover systems (i.e., soil covers, geosynthetic covers), excavation and disposal actions, removal systems (i.e., soil vapor extraction, electrical resistance heating, dynamic underground stripping), treatment systems (i.e., enhanced bioremediation, chemical oxidation), stabilization (i.e., in situ grouting), mixing zones, and monitored natural attenuation.

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Previous five-year remedy reviews were conducted for all SRS operable units that have implemented a remedial action with the results documented in a single report. Due to the increasingly large size of a single report, this strategy was altered for the Fifth Five-Year Remedy Review Report. The strategy is to now conduct phased remedy reviews for operable unit groupings based on remedy similarity rather than combining all operable unit reviews in a single report. The operable units will be grouped by the following remedy types: (1) native soil cover and/or LUCs, (2) groundwater, (3) engineered cover system, (4) geosynthetic or stabilization/solidification cover system, and (5) operating equipment. The remedy reviews for each group will be performed in successive years, so that all groups/reviews are completed within five years from the Fourth Five-Year Remedy Review Report, which was issued on February 4, 2014. The phased submittals allow DOE, EPA, and SCDHEC to effectively identify and resolve issues for similar remedies simultaneously and efficiently implement any needed optimization initiatives for similar projects. The phased approach began with the submittal of the Fifth Five-Year Remedy Review Report for Savannah River Site Operable Units with Native Soil Covers and/or Land Use Controls in December 2014.

The five-year remedy review will address three major questions:

- Are the remedies functioning as intended by the decision document?
- Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of remedy selection still valid?
- Has any other information emerged that could call into question the protectiveness of the remedy?

The fourth phased submittal of the Fifth Five-Year Remedy Review Report will focus on SRS operable units with geosynthetic or stabilization/solidification cover systems. Geosynthetic cover systems are used at SRS when there is a concern that contamination may leach to groundwater above acceptable levels. Geosynthetic cover systems are designed to meet layer/liner criteria requirements and a specific conductivity (usually  $1 \times 10^{-7}$  centimeter per second or less). In some cases, a stabilization/solidification technology (i.e., in-situ-grouting) may be used with a low permeability cover (i.e., compacted clay, concrete, etc.) to deter contaminant migration and provide another layer of protection to prevent intrusion and exposure to contaminated material. DOE will notify the public when the Fifth Five-Year Remedy Review Report for Savannah River Site Operable Units with Geosynthetic or Stabilization/Solidification Cover Systems is complete and is available to the public. The report is currently planned to be available to the public in February 2018.

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## ***Transuranic (TRU) Waste Pads Volume XIII Minor Modification*** *(Current permit expires 2/14/2026)*

An editorial (Class 1) change has been made to the Savannah River Site's Transuranic (TRU) Waste Pads' Resource Conservation and Recovery Act (RCRA) Permit Application. The formation of mold at several of the Pads has become a potential health concern for the employees who work on the Pads. Industrial Hygiene has noted that better cross-ventilation will help stop the mold growth, mitigating the health effects. Consequently, the requirement to lock the entrances to the buildings has been deleted. However, the South Carolina Department of Health and Environmental Control (SCDHEC) requirement to prevent inadvertent entry and minimize the possibility for the unauthorized access of persons or livestock to the active portion of the facility is still adequately maintained by the following measures:

1. Providing a physical barrier (gate) to the facility that is locked when staff are not present in the facility,
2. Controlling access to the general Savannah River Site by guard gates manned by the Site's security force, and
3. Posting all gates and facility entrances with signage reading: "Danger – Unauthorized Personnel Keep Out."

Written comments may be sent to SCDHEC. For additional information, contact Janet Griffin, Savannah River Nuclear Solutions, LLC, Savannah River Site, 730-1B, Aiken, SC 29808. Please send your comments to S. L. French, Director, Division of Waste Management, South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, SC 29201-1708.

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For more information on this  
or other environmental and compliance  
activities at SRS, please contact:

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